ATTACHMENT A

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Original) A method for inserting a watermark signal into audio signal data, comprising the steps of:

Fourier transforming audio signal data in the frequency domain in a form of first components and second components;

wavelet transforming absolute values of said first components to generate first spectral coefficients;

discrete cosine transforming a watermark signal to generate second spectral coefficients;

combining said first spectral coefficients and said second spectral coefficients; and

inverse wavelet transforming the combined coefficients.

2. (Original) The method for inserting a watermark signal into audio signal data as claimed in claim 1, wherein said first components and second components are the magnitudes and phases of coefficients respectively.

3. (Original) The method for inserting a watermark signal into audio signal data as claimed in claim 1, wherein said step of combining includes a step of performing a weighted addition of said first and second spectral coefficients.

4. (Original) The method for inserting a watermark signal into audio signal data as claimed in claim 3, further comprising a step of inverse Fourier transforming the output of said inverse wavelet transforming by using said phases of coefficients.

5. (Currently amended) The method for inserting a watermark signal into audio signal data as claimed in claim 4, further comprising a step of multiplying [[an]] information from said first spectral coefficients to said second spectral coefficients prior to combing step.

6. (Original) The method for inserting a watermark signal into

audio signal data as claimed in claim 5, further comprising a step of multiplying a scaling factor to said second spectral coefficients prior to said combining step.

7. (Original) The method for inserting a watermark signal into audio signal data as claimed in claim 6, wherein said scaling factor is in the range of 0.01 ~ 0.05.

8. (Original) The method for inserting a watermark signal into audio signal data as claimed in claim 5, wherein said information is a function of the sign of said first spectral coefficients.

9. (Original) An apparatus for inserting a watermark signal into audio signal data, comprising:

a means for Fourier transforming audio signal data into amplitude components and phase components;

a means for wavelet transforming absolute values of said amplitude components to generate first spectral coefficients;

a means for discrete cosine transforming a watermark signal to generate second spectral coefficients;

a means for combining said second spectral coefficients to said first spectral coefficients respectively; and

inverse wavelet transforming the coefficients.

10. (Original) The apparatus for inserting a watermark signal into audio signal data as claimed in claim 9, wherein said combining means comprises a means for multiplying an information from said first spectral coefficients to said second spectral coefficients.

11. (Original) The apparatus for inserting a watermark signal into audio signal data as claimed in claim 10, wherein said combining means comprises a means for multiplying a scaling factor to said second spectral coefficients.

12. (Original) The apparatus for inserting a watermark signal into audio signal data as claimed in claim 11, wherein said scaling factor is in the range of 0.01 ~ 0.05.

13. (Original) The apparatus for inserting a watermark signal into audio signal data as claimed in claim 9, further comprising a means for inverse Fourier transforming said respectively combined coefficients using said phase components.

14. (Original) The apparatus for inserting a watermark signal into audio signal data as claimed in claim 10, wherein said information is a function of the sign of said first spectral coefficients.

15. (Original) A method for extracting a watermark from a watermark-embedded audio data, comprising steps of:

Fourier transforming a watermark-embedded audio data and an original audio data to generate first components and second components respectively;

Wavelet transforming the absolute magnitudes of said first components of said watermark-embedded audio data and said original audio data respectively;

taking the differences between wavelet-transform coefficients of said watermark-embedded audio data and said original audio data; and

inverse-discrete cosine transforming said differences.

16. (Original) The method for extracting a watermark from a watermark-embedded audio data as claimed in claim 15, further comprising a step of multiplying the sign of said wavelet-transform coefficients associated with said original audio data

to wavelet-transform coefficients associated with said watermark-embedded audio data.

17. (Original) The method for extracting a watermark from a watermark-embedded audio data as claimed in claim 16, wherein said multiplying step further comprises a step of multiplying a scaling factor to wavelet coefficients associated with said watermark-embedded audio data.

18. (Original) The method for extracting a watermark from a watermark-embedded audio data as claimed in claim 16, wherein said sign is obtained by using a signum function.

19. (Original) The method for extracting a watermark from a watermark-embedded audio data as claimed in claim 17, wherein said scaling factor is in the range of 20 ~100.

20. (Original) An apparatus for extracting a watermark from a watermark-embedded audio data, comprising:

a means for Fourier transforming a watermark-embedded audio data and an original audio data to generate first components and second components respectively;

a means for wavelet transforming the absolute magnitudes of said first components of said watermark-embedded audio data and said original audio data respectively;

a means for taking the differences between wavelet-transform coefficients of said watermark-embedded audio data and said original audio data; and

a means for inverse-discrete cosine transforming said differences.

21. (Original) The apparatus for extracting a watermark from a watermark-embedded audio data as claimed in claim 20, further comprising a means for multiplying the sign of said wavelet-transform coefficients associated with said original audio data to wavelet-transform coefficients associated with said watermark-embedded audio data.

22. (Original) The apparatus for extracting a watermark from a watermark-embedded audio data as claimed in claim 21, further comprising the means for multiplying a scaling factor to wavelet coefficients associated with said watermark-embedded audio data.

23. (Original) The apparatus for extracting a watermark from a

watermark-embedded audio data as claimed in claim 21, wherein said sign is obtained by using a signum function.

24. (Original) The apparatus for extracting a watermark from a watermark-embedded audio data as claimed in claim 22, wherein said scaling factor is in the range of 20 ~100.